



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

Rhoads

Application No.: 09/758,532

Filed: January 10, 2001

For: DATA ENTRY METHOD AND SYSTEM

Examiner: Simon Nguyen

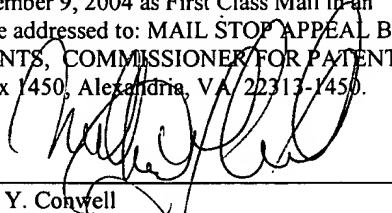
Date: September 9, 2004

Art Unit 2685

Confirmation No. 9755

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Enclosed for filing in the above-captioned matter are the following:

- ☒ Appeal Brief (in Triplicate) (fee **\$330.00**)
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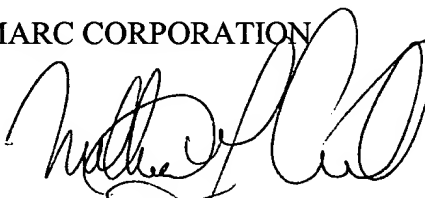
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Respectfully submitted,

DIGIMARC CORPORATION

By



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Registration No. 31,943



PATENT

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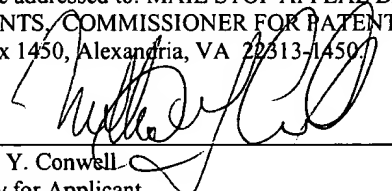
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APPEAL BRIEF

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Sir:

This brief is in furtherance of the Notice of Appeal filed June 21, 2004. Please charge the fee required under 37 CFR 1.17(f) or any deficiency to deposit account 50-1071 (see transmittal letter).

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APPEAL BRIEF 09/758,532

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I. REAL PARTY IN INTEREST

The real party in interest is Digimarc Corporation, by an assignment from the inventor recorded at Reel 11753, Frames 281-282, on April 26, 2001.

II. RELATED APPEALS AND INTERFERENCES

None

III. STATUS OF CLAIMS

Claims 2 and 7-20 are rejected and appealed. Claims 1 and 3-6 are canceled.

IV. STATUS OF AMENDMENTS

In June, 2004, with the Notice of Appeal, and responsive to the second (non-final) Action, applicant submitted an Amendment. No communication concerning this Amendment has yet been received. (The Amendment rewrote claim 2 in independent form, canceled claims 1 and 3-6, presented arguments, and amended the specification and drawings.)

V. SUMMARY OF THE INVENTION

The present invention relates to improvements in wireless telephony devices (e.g., cell phones), so as to enhance their use as optical data entry devices.

According to one aspect, the invention comprises a wireless telephony device that includes an optical sensor with plural sensing elements, a lens for imaging an object onto the sensor, and decoder circuitry.¹ The decoder circuitry serves to decode plural bit information *steganographically* encoded in the sensor image data.²

“Steganography” (sometimes termed “digital watermarking”) is implicated in each of the claims of the present application, and is the science of hiding digital data in some other object, without leaving human-apparent evidence of alteration or data representation. Thus, a photograph, artwork, or other graphic on an object (e.g., a catalog page³) can be steganographically encoded to convey a digital data payload. The graphic looks essentially unchanged to a human viewer, but a cell phone according to embodiments of the present invention can decode the encoded payload information from image data acquired by the sensor.

Steganography can take many forms - several are detailed in patent documents incorporated-by-reference in the present specification.⁴ One form of steganography favored by the present Applicant involves making subtle changes to the luminance of pixels comprising a graphic to thereby encode a hidden multi-bit auxiliary data payload.⁵ The changes are too slight to be perceptible to human viewers. But when such an encoded graphic is captured and analyzed by a decoder, the multi-bit payload can be recovered.

¹ See, e.g., original claim 1; specification at page 1, lines 17-20

² See, e.g., original claim 2; specification at page 1, lines 19-20, and page 2, lines 21-22. Steganographic decoders are further detailed in patent documents incorporated by reference in the present specification (*see, e.g.,* page 9, lines 1 and 12-13).

³ See, e.g., specification at page 1, lines 22-25.

⁴ See, e.g., incorporation by reference of patents 5,850,481, 5,841,886, 5,809,160, 5,862,260 and 5,930,369, per specification at page 8, line 30 thru page 9, line 1, and page 9, lines 5 and 12-13.

⁵ See, e.g., application 09/292,569, incorporated-by-reference at page 1, line 13 and page 9, lines 12-13, which notes on page 2, “The physical manifestation of watermarked information most commonly takes the form of altered signal values, such as slightly changed pixel values, picture luminance, picture colors, DCT coefficients, instantaneous audio amplitudes, etc. “

Once a device according to the present invention decodes the multi-bit payload, it can take several actions using this data.

One action is to link to another device, such as a telephone that is identified by the decoded data.⁶ Another action is to link to another computer, such as a web server – again identified by the decoded data.⁷ In this latter case a web page loaded from the server can be presented on a display screen of the wireless device.

(The present assignee markets a technology, under the brand Digimarc MediaBridge, which enables linking from physical documents to electronic web pages by use of steganographic encoding. An early version of that technology was termed “Bedoop” – a term that is used in the present specification to refer to such physical media -to- electronic media linking, and the encoding of data, e.g., steganographically, that enables such functionality.)

One application facilitated by the present invention is electronic shopping from printed catalogs. A photograph in a catalog can be steganographically encoded to identify the merchant and the depicted item. When presented to a cell phone employing principles of the present invention, the phone can decode the embedded information, contact the merchant’s web site, and place an order for the depicted merchandise. (The user’s size information, credit card information, etc., can be stored in a user profile.)⁸

In certain embodiments of the invention, the telephony device is also equipped with GPS capability, so that the device takes a first action responsive to the decoded data when in a first location, and takes a second action when in a second location. These first and second actions

⁶ See, e.g., specification at page 3, line 22 through page 4, line 18.

⁷ See, e.g., specification at page 1, lines 21-25.

⁸

may involve linking to different remote devices/servers, depending on location, and possibly loading different web pages for display on the device screen.

The Detailed Description of the present application spans eight pages. The Board is invited to review this Description for a fuller understanding of the technology.

VI. ISSUE

Did the Office establish *prima facie* obviousness of each of claims 2 and 7-20 when (a) the art fails to teach that for which it is cited; (b) the references cannot be combined to yield the claimed arrangements; and (c) the proposed modifications and combinations of the art proceed in accordance with the Examiner's hindsight and applicants' specification, rather than a suggestion in the art.

VII. GROUPING OF CLAIMS

Each of the pending claims is separately patentable, as detailed below.

VIII. ARGUMENT

1. Claim 2

Claim 2 (as well as claims 7-8 and 5-16) stands rejected as obvious over Reece (5,893,037) in view of Ray (6,192,257). Claim 2 reads as follows:

2. In a wireless telephony device including a microphone, a modulator, and an RF amplifier, the device serving to receive audio and transmit an RF signal conveying audio modulation, an improvement comprising an optical sensor having plural sensing elements and producing image signals, a lens for imaging an object onto the sensor, and decoder circuitry for decoding plural bit information steganographically conveyed by the object.

The principal reference, Reelee, discloses a cell phone to which a digital camera can be connected, allowing images captured by the camera to be transmitted by the cell phone.

Ray discloses a video transmission system using cellular phone technology.

The Examiner contends that Ray's system includes a "*processor for encoding plural-bit data steganographically within image data.*"⁹ This is erroneous, in various ways.

For one, the claim does not concern encoding. It involves *decoding*.

Moreover, Ray does not include any such an element (neither an encoder nor a decoder of steganographic data).

In support of his assertion concerning steganographic processing, the Examiner cites Ray at Fig. 4, and column 4, lines 6-27.¹⁰ However, these excerpts do not teach that for which they are cited.

Fig. 4 is a block diagram of one of Ray's embodiments, and is not understood to relate to steganographic encoding or decoding. (The figure includes an "ADPCM decoder 434." However, ADPCM is a variant of pulse code modulation,¹¹ and is not understood to relate to steganography.)

⁹ April 5, 2004, Action, page 5, lines 14-15.

¹⁰ April 5, 2004, Action, page 5, line 15.

¹¹ ADPCM is Adaptive Differential Pulse Code Modulation. See, e.g., <http://en.wikipedia.org/wiki/ADPCM>

The cited excerpt in column 4 details certain aspects of the processing of image data captured by the camera, but again is not understood to relate to steganographic encoding or decoding.

A search of the Ray specification fails to find any mention of steganography, or any variant thereof.

Since the art fails to teach that for which it has been cited, a *prima facie* showing under § 103 has not been established.

Moreover, claim 2 speaks of plural bit information steganographically conveyed *by the object*. This limitation has not been addressed in the Action, again rendering the rejection insufficient.

Still further, the rejection cites disparate elements from two references, but fails to offer a legally sufficient rationale supporting their proposed modification and combination. After his mistaken assertion concerning Ray's steganographic teaching, the Examiner concludes:

...[I]t would have been obvious to one skilled in the art at the time the invention was made to have Reelee, modified by Ray to digitize a captured image in order to improve the quality of the picture.

Contrary to the Examiner's logic, Reelee does not need to borrow any teachings from Ray to "digitize a captured image." Reelee already provides digitized image data,¹² so the combination with Ray to digitize a captured image is redundant. Moreover, the stated rationale does not address the steganographic limitation.

¹² Reelee's system already has an electronic image sensor and provides "digital image signals." See Reelee abstract at lines 10-13.

In view of such deficiencies, the Examiner has failed to meet the burden of § 103, and the rejection of claim 2 must be reversed.

2. **Claim 7**

Claim 7 also stands rejected as obvious over Reeley in view of Ray. Claim 7 reads as follows:

*7. In a wireless telephony device including a microphone, a modulator, and an RF amplifier, the device serving to receive and transmit RF signals conveying audio data, an improvement comprising:
a display screen;
an optical sensor having plural sensing elements and producing image data;
a lens for imaging an object onto the sensor; and
a processor for discerning plural-bit data steganographically encoded within said image data.*

Again, the Examiner contends that Ray teaches a processor for encoding plural-bit data steganographically within image data. As detailed above, this is incorrect. (And, here, the claim calls for “discerning plural-bit data steganographically encoded...” The Action again speaks of encoding, alone.)

Here again, the Examiner offered the same rationale as cited above in connection with claim 2, in support of the proposed modification/combination of references. Again, this rationale is inadequate.

Claim 7 also calls for a display screen (not required by claim 2). The Examiner's stated rationale did not address why this element would have been among those selectively adopted from the cited art (while numerous other teachings from the cited art are omitted).

Again, the Action has failed to establish a *prima facie* case, and the rejection must be reversed.

3. **Claim 8**

Claim 8 also stands rejected as obvious over Reeley in view of Ray.

Claim 8 is dependent on claim 7, and is similarly allowable. Claim 8 is also patentable independently. The claim reads:

8. *The device of claim 7 in which said processor also directs an action based on said plural-bit data.*

As noted, none of the art teaches discerning plural-bit data steganographically encoded within image data. As a consequence, none of the art can teach directing an action based on this discerned plural-bit data.

The Examiner cites Ray at col. 4, lines 6-51, and col. 8, lines 45-53, in support of the claim 8 limitation. Again, however, the cited passages do not teach that for which they are cited.

Again, the Action failed to establish a *prima facie* case of obviousness.

4. **Claim 15**

Claim 15 also stands rejected as obvious over Reeley in view of Ray.

Claim 15 is dependent on claim 7, and is similarly allowable. Claim 15 is also patentable independently. The claim reads:

15. The device of claim 7 in which said processor also directs the device to transmit at least some of said plural-bit data to a remote system for further action.

The Examiner cites Reeley's transmission of an image from his device. However, the claim requires transmission of some of the plural bit data *discerned from data steganographically encoded within the image data*. Reeley's teaching does not meet this limitation.

Again, the rejection is deficient and must be reversed.

5. **Claim 16**

Claim 16 also stands rejected as obvious over Reeley in view of Ray.

Claim 16 is dependent on claim 15, and is similarly allowable. Claim 16 is also patentable independently. The claim reads:

16. The device of claim 15, further including a memory in which said plural-bit data is cached for later transmission to the remote system.

The Action does not consider the caching limitation of this claim. Again, the rejection is deficient and must be reversed.

6. **Claim 17**

Claim 17 (as well as claims 18-20) stands rejected as obvious over Ray (6,192,257) in view of Alperovich (6,317,609). The claim reads as follows:

*17. A method of operating a cell phone, including:
capturing image data using a 2D image sensor included with said cell phone;
discerning plural-bit data steganographically encoded in said image data;
at least in part by reference to said plural-bit data, determining an identity of a
remote system; and
establishing communication between said remote system and the cell phone thru a
link that includes a cellular network.*

The Examiner states that Ray discloses ...”discerning plural-bit data steganographically encoded in the image data.” However, he is again mistaken. As detailed above, Ray contains no such disclosure.

The Alperovich reference is said by the Examiner to disclose “a video phone (20a) sends a captured image and voice to an identified cell phone (20b) via a cellular system.”¹³ However, contrary to the Examiner’s implication, such teaching of Alperovich does not meet the limitations expressed in the claim.

And again, the rationale offered by the Examiner in support of the proposed modification and combination of Ray and Alperovich is deficient. It states:

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to have Ray, modified by Alperovich in order to establish the video phone communication with an identified remote user.

¹³ April 5, 2004, Action, page 6, lines 14-15.

The goal of establishing a video phone communication with an identified remote user would not suggest to an artisan any modification and hybridization of teachings from the cited art to yield the arrangement of claim 17.

Again, the Action has failed to establish obviousness.

7. Claim 18

Claim 18 also stands rejected as obvious over Ray (6,192,257) in view of Alperovich (6,317,609).

Claim 18 is dependent on claim 17, and is similarly allowable. Claim 18 is also patentable independently. The claim reads:

18. The method of claim 17 wherein the remote system is another cell phone.

Contrary to the Examiner's assertions, the cited art does not teach establishing communication to a cell phone identified, at least in part, by plural-bit data steganographically encoded in image data.

Again, *prima facie* obviousness has not been established, and the rejection must be reversed.

8. Claim 19

Claim 19 also stands rejected as obvious over Ray (6,192,257) in view of Alperovich (6,317,609).

Claim 19 is dependent on claim 17, and is similarly allowable. Claim 19 is also patentable independently. The claim reads:

19. The method of claim 17 wherein the remote system is a computer, and the communication includes transferring graphic data from said computer for display on the cell phone.

Contrary to the Examiner's assertions, the cited art is not understood to teach establishing communication from a cell phone to a remote computer, and transferring graphic data from that computer for display on the cell phone, where the identity of the remote computer is determined by reference to data steganographically encoded in image data.

Again, *prima facie* obviousness has not been established, and the rejection must be reversed.

9. Claim 20

Claim 20 also stands rejected as obvious over Ray (6,192,257) in view of Alperovich (6,317,609).

Claim 20 is dependent on claim 17, and is similarly allowable. Claim 20 is also patentable independently. The claim reads:

20. The method of claim 17 that further includes sensing a location of the cell

phone, and determining the identity of said remote system at least in part by reference to said location.

Contrary to the statement in the Action, Alperovich does not teach “sensing a location of the cell phone, and determining the identify of said remote system at least in part by reference to said location.

And, again, there is no legally sufficient rationale offered in support of the proposed modification/combination of references to yield the claimed arrangement.

Again, a *prima facie* case under § 103 has not been established, and the rejection must be reversed.

10. Claim 9

Claim 9 (as well as claims 10 and 11) stand rejected as obvious over Reelee and Ray, and further in view of Alperovich.

Claim 9 is dependent on claim 8, and is allowable for the reasons given above in connection with claim 8. Claim 9 is also patentable independently. The claim reads:

9. The device of claim 8 in which said action based on said plural-bit data is presenting information obtained from a remote computer on said display screen.

Concerning this claim (as well as claims 10 and 11), the Action states “*the modified Reelee system fails to teach the information transmitting/receiving via internet,*” and then addresses this shortcoming by reference to Alperovich.

It will be recognized, however, that the limitation addressed by the Examiner is not the

limitation of the claim. The Examiner has failed to cite any art teaching the limitation of the claim.

And again, the rationale offered in support of the rejection is inadequate. It states (for all of claims 9-11):

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to have Ray, modified by Alperovich in order to send or receiving image and voice call via internet.

Among other shortcomings, this rationale fails to address the principal reference: Reelev. Moreover, sending and receiving image and voice by the internet does not track the limitation of the claim.

Again, the rejection is inadequate and must be reversed.

11. Claim 10

Claim 10 stands rejected as obvious over Reelev and Ray, and further in view of Alperovich.

Claim 10 is dependent on claim 9, and is similarly allowable. Claim 10 is also patentable independently. The claim reads:

10. The device of claim 9 in which said information is a web page.

Contrary to the Examiner's assertion, Alperovich appears to have no teaching of presenting a web page on the display screen of a cell phone.

12. Claim 11

Claim 10 stands rejected as obvious over Reeley and Ray, and further in view of Alperovich.

Claim 11 is dependent on claim 8, and is allowable for the reasons given earlier in connection with claim 8. Claim 11 is also patentable independently. The claim reads:

11. The device of claim 8 in which said action is establishing a telephonic link to a phone number determined by reference to said plural-bit data

None of the cited art teaches establishing a telephonic link to a phone number determined by reference to said [discerned from steganographic encoding in image data] plural bit data.

And, again, the rationale offered in support of the rejection does not lead an artisan to the arrangement claimed.

Again, a *prima facie* case has not been made out.

13. Claim 12

Claim 12 (as well as claims 13 and 14) stand rejected as obvious over Reeley and Ray and Alperovich, and further in view of Reitmaa (WO 98/48548).

Claim 12 is dependent on claim 8, and is allowable for the reasons given above in connection with claim 8. Claim 12 is also patentable independently. The claim reads:

12. The device of claim 8 further including a GPS system for determining

location of the device, and said action is a first action if the GPS system determines the device is in a first location, and said action is a second, different action if the GPS system determines the device is in a second, different location.

Reitmaa teaches an imager-equipped mobile phone with a GPS. The GPS data is displayed to the user on a phone display, e.g., on map data.

Reitmaa fails to teach directing first or second different actions, depending on the location of the cell phone. The action in Reitmaa is unchanged: display present location on the screen.

Moreover, the Examiner again patchworks disparate teachings from disparate references (now numbering four) in an attempt to yield the claimed arrangement. But again, the rationale offered in support of such selective combination/modification of elements is insufficient. The Action states:

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to have modified Reece system, modified by Reitmaa in order to provide more location's accuracy of a mobile terminal than other techniques.

Again, this rationale is flawed in several ways. It fails to consider two of the applied references (Ray and Alperovich). It draws on hindsight rather than a suggestion in the art to combine. And it seeks to achieve an aim (“provide more location’s accuracy”) that does not track the claim language.

Again, the rejection does not meet the statutory standards, and must be reversed.

14. Claim 13

Claim 13 also stands rejected as obvious over Reelee and Ray and Alperovich, and further in view of Reitmaa.

Claim 13 is dependent on claim 12, and is similarly allowable. Claim 13 is also patentable independently. The claim reads:

13. The device of claim 12 in which said first action is linking from said device to a first remote system, and said second action is linking from said device to a second remote system.

Contrary to the Action, Reitmaa does not teach the limitation of claim 13. Accordingly, the cited art cannot be combined to yield the arrangement of claim 13.

Again, the rejection fails and must be reversed.

15. Claim 14

Claim 14 also stands rejected as obvious over Reelee and Ray and Alperovich, and further in view of Reitmaa.

Claim 14 is dependent on claim 12, and is similarly allowable. Claim 14 is also patentable independently. The claim reads:

14. The device of claim 12 in which said first action is loading first graphic data from a remote system for presentation on said display screen, and said second action is loading second graphic data from a remote system for presentation on said display screen.

Again, none of the art teaches the claim limitation. Again, the rationale offered in support of the rejection fails to address two of the four applied references, and seeks a goal ("to

provide more location's accuracy") that has no apparent relationship to the claimed arrangement.

Again, the rejection must be reversed.

IX. CONCLUSION

The art fails to teach that for which it was cited. None of the art concerns decoding or discerning steganographically encoded information. The jig-sawing of references proposed by the Examiner is guided by hindsight rather than cognizable suggestions in the art, and such jig-sawing is rationalized with reasons unrelated to the claims.

The rejections do not meet the Office's burden under §103 and must be reversed.

Date: September 9, 2004

CUSTOMER NUMBER 23735

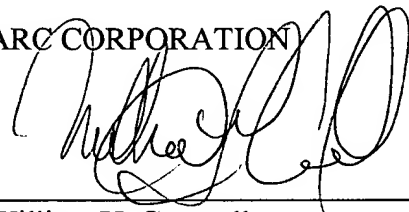
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Respectfully submitted,

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APPENDIX A

PENDING CLAIMS

1. (Canceled)

2. In a wireless telephony device including a microphone, a modulator, and an RF amplifier, the device serving to receive audio and transmit an RF signal conveying audio modulation, an improvement comprising an optical sensor having plural sensing elements and producing image signals, a lens for imaging an object onto the sensor, and decoder circuitry for decoding plural bit information steganographically conveyed by the object.

3-6. (Canceled)

7. In a wireless telephony device including a microphone, a modulator, and an RF amplifier, the device serving to receive and transmit RF signals conveying audio data, an improvement comprising:

a display screen;

an optical sensor having plural sensing elements and producing image data;

a lens for imaging an object onto the sensor; and

a processor for discerning plural-bit data steganographically encoded within said image data.

8. The device of claim 7 in which said processor also directs an action based on said plural-bit data.

9. The device of claim 8 in which said action based on said plural-bit data is presenting information obtained from a remote computer on said display screen.

10. The device of claim 9 in which said information is a web page.

11. The device of claim 8 in which said action is establishing a telephonic link to a phone number determined by reference to said plural-bit data

12. The device of claim 8 further including a GPS system for determining location of the device, and said action is a first action if the GPS system determines the device is in a first location, and said action is a second, different action if the GPS system determines the device is in a second, different location.

13. The device of claim 12 in which said first action is linking from said device to a first remote system, and said second action is linking from said device to a second remote system.

14. The device of claim 12 in which said first action is loading first graphic data from a remote system for presentation on said display screen, and said second action is loading second graphic data from a remote system for presentation on said display screen.

15. The device of claim 7 in which said processor also directs the device to transmit at least some of said plural-bit data to a remote system for further action.

16. The device of claim 15, further including a memory in which said plural-bit data is cached for later transmission to the remote system.

17. A method of operating a cell phone, including:
capturing image data using a 2D image sensor included with said cell phone;
discerning plural-bit data steganographically encoded in said image data;
at least in part by reference to said plural-bit data, determining an identity of a remote system; and
establishing communication between said remote system and the cell phone thru a link that includes a cellular network.

18. The method of claim 17 wherein the remote system is another cell phone.

19. The method of claim 17 wherein the remote system is a computer, and the communication includes transferring graphic data from said computer for display on the cell phone.

20. The method of claim 17 that further includes sensing a location of the cell phone, and determining the identity of said remote system at least in part by reference to said location.